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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/078,382	02/21/2002	Wen Dong Song	2826-11	5009

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NIXON & VANDERHYE P.C.  
1100 North Glebe Road, 8th Floor  
Arlington, VA 22201-4714

EXAMINER
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ALANKO, ANITA KAREN

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 10/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/078,382

Applicant(s)

SONG ET AL.

Examiner

Anita K Alanko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☒ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_                      6) ☐ Other:

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***Claim Rejections - 35 USC § 112***

Claims 3 and 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3 and 6 are unclear because of improper Markush group terminology. If applicant intends to cite a Markush group, then the phrase "a member selected from the group consisting of" should be used.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

*Claims 1-10, 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta et al (US 5,057,184) in view of Douglas (US 6,177,358).*

Gupta discloses a method including  
forming a liquid 12 on a substrate surface 28 and  
directing laser energy 22 from a laser through the film to etch the substrate surface,  
wherein etched material is carried away from the substrate surface via evaporation of the film  
during said etching (see abstract).

Gupta does not disclose that the liquid is in the form of a liquid film. Rather, Gupta discloses immersing the substrate in a bath of liquid.

Douglas teaches that a useful alternative for immersing in a bath of liquid (Fig.2) is to form a liquid film 26 (Fig.3) during the photo-induced patterning of a substrate. It would have been obvious to one with ordinary skill in the art to use a liquid film in the method of Gupta because Douglas teaches that it is a useful alternative for forming liquids during photo-induced patterning of a substrate.

As to claim 2, Douglas teaches to introduce a water vapor 24, for which it would be obvious to jet because it is a conventional means of introducing water vapor to chambers.

As to claim 3, Gupta discloses to use water or alcohol or inert liquid (col.4, lines 17-23).

As to claim 4, it is unclear how thick the liquid film is in the method of Douglas, however it would have been obvious to one with ordinary skill in the art to use the cited thickness in the modified method of Gupta because the thickness appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

As to claims 5-6, examiner takes official notice that using a gas such as nitrogen, compressed air, oxygen or inert gas to carry liquid vapor is a conventional technique. It would have been obvious to one with ordinary skill in the art to use a gas such as nitrogen, compressed air, oxygen or inert gas to carry liquid vapor in the modified method of Gupta because it is a conventional technique.

As to claims 7-8, Gupta discloses to use pulses of 20-30 nanoseconds (co.5, line 12), which is within the range cited.

As to claims 9-10, since the same method is carried out in Gupta, it is expected to encompass the same laser fluence as that cited in claim 9. Gupta discloses that the laser fluence determines the depth of the etch (col.4, lines 39-41). It would have been obvious to one with

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ordinary skill in the art to use the cited fluence in the modified method of Gupta because the fluence appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

As to claims 12-16, Gupta discloses that the substrate may comprise one or more layers (silicon oxide on silicon, col.4, line 16).

*Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta et al (US 5,057,184) in view of Douglas (US 6,177,358) and admitted prior art.*

The discussion of modified Gupta from above is repeated here.

As to claim 11, Gupta does not disclose that the substrate may comprise ITO. Gupta discloses that metal oxides may be used (col.4, lines 14-17). Admitted prior art teaches that it is known to laser pattern ITO (page 2, lines 6-20). It would have been obvious to one with ordinary skill in the art to pattern ITO in the modified method of Gupta because admitted prior art teaches that ITO can be laser patterned.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art shows methods of laser induced wet etching.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K Alanko whose telephone number is 703-305-7708. The examiner can normally be reached on Monday, Tuesday and Friday, 8:00 am-4:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 703-305-2667. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

*Anita K. Alanko*

Anita K Alanko  
Primary Examiner  
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